A NEW PLEISTOCENE *PLATYLEPAS* FROM FLORIDA

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Aside from scattered references in the literature to Tertiary and Pleistocene barnacles, all too generally cited as *Balanus* sp., no attempt has yet been made to determine the exact nature of the fossil barnacle fauna of Florida as a whole or its many constituents. It is hoped that this and subsequent studies will serve to fill the existing void in our knowledge of the fossil Cirripedia of Florida.

During the latter part of 1962 a small number of Neogene turtle-barnacles (*Platylepas* and *Chelonibia*) was borrowed from the U. S. Geological Survey collections. This material was supplemented with specimens from the Florida State Museum collections at the University of Florida and by a small collection of *Chelonibia* received from Dr. William K. Emerson of the American Museum of Natural History, New York. The present paper is the first in a series of papers on the fossil turtle-barnacles of Florida.

Only one species of *Platylepas* was in the collections assembled. Inasmuch as this was represented by a single parietal plate of a heretofore undescribed species, the author revisited the collecting area during February 1963 in an unsuccessful attempt to find additional material. At the time a small but representative collection of macro- and microscopic invertebrates was made (Ross, 1963). These specimens are deposited in the Florida State Museum collections at the University of Florida (accession number 383).

Type Locality

The platylepad was collected from the spoil banks adjacent to Rim Ditch Canal (U. S. Geological Survey Cenozoic locality 22805), St. Lucie County, Florida (Fort Pierce S.W. Quadrangle). The site is located in the NE ¼ Sec. 29, T. 36 S., R. 39 E., on the northeast side of the canal, approximately 500 yards northeast of the Florida East Coast Railroad (see fig. 1) and about 2 miles southeast of the intersection, at bridge 27, of Shinn Road and Rim Ditch Canal. Shinn Road crosses U. S. Highway 70 about 11 miles southwest of Fort Pierce, St. Lucie County. The intersection of Shinn Road and Rim Ditch Canal is approximately 3.1 miles south of the intersection of U. S. Highway 70 and Shinn Road.

Fig. 1. View of Rim Ditch Canal looking southeast toward the Florida East Coast Railroad bridge.

A brief geological and paleoecological discussion of the late Pleistocene, Sangamon interglacial, deposits of this area is given in Ross (1936). The molluscan fauna occurring along the spoil banks consists of a mixture of four distinct ecological types, marine, brackish, fresh-water, and terrestrial. On recent analogues the mixed fauna indicates successive stages, from marine to terrestrial (probably in response to sea level and climatic fluctuations), in the evolutionary history of what is believed to have been initially a marine lagoonal environment.

Order THORACICA Darwin, 1854

Family **Balanidae** Gray, 1825

Subfamily Coronulinae Leach, 1825

Genus *Platylepas* Gray, 1825

Platylepas Gray, 1825, Ann. Philos., new ser., vol. 10, p. 105, for *P*[*latylepas*] *pulchra* Gray and "*C*[*helonibia*] *bisexloba* [*sic*] Ranz." [not of Ranzani, 1818, 1820]. Type species, *Platylepas pulchra* [=*Platylepas hexastylos* (Fabricius), 1798], by subsequent designation of Pilsbry, 1916, p. 284.

Coronula: de Blainville, 1825, in part, Manuel de malacologie et de conchyliologie, p. 599-601, for *Coronula bisexlobata* de Blainville, *C*[*oronula*] *testudinaria* (Linnaeus), *C*[*oronula*] *balanarum* [*sic*] (Spengler), *C*[*oronula*] *diadema* (Linnaeus), and *C*[*oronula*] *tubicinella* (Lamarck) [reference to *Coronula bisexlobata* only].

Columellina Bivona-Bernardi, 1832, Effermeridi Sci. Lett. Sicilia, p. 14. Type species, *Columellina bi-sexlobata* (de Blainville) [= *Platylepas hexastylos* (Fabricius), 1798], by original monotypy and subsequent designation of Pilsbry, 1916, p. 284.

Coronula: Philippi, 1836, in part, Enumeratio molluscorum Siciliae . . . , p. 252, for *Coronula bissexlobata* [*sic*] de Blainville [reference to species only].

Coronula: Chenu, 1843, in part, Illustrations Conchyliologiques, unpaginated, pt. 3, pl. 2, pts. 18-19, pl. 1, for *Coronula sulcata* Chenu, *Coronula diadema* (Linnaeus), *Coronula balaenaris* [*sic*] (Spengler), *Coronula testitudinaria* [*sic*] (Linnaeus) and *Coronula californiensis* Chenu [reference to *Coronula sulcata* and *Coronula californiensis* only].

Culumellina (error for *Columellina* Bivona-Bernardi, 1832): Krüger, 1911, Abh. Bayer. Akad. Wiss., Math.-Phys. Kl., vol. 2, suppl. 6, p. 59.

U[*latylepas*] (error for *Platylepas* Gray, 1825): Pilsbry, 1916, Bull. U. S. Nat. Mus., no. 93, p. 286.

Definition. Small, slightly asymmetrical, hexamerous, conic barnacles, with the base usually decidedly larger than the orifice. Parietal "tubes" are either present or the walls are solid. Each compartment is generally bilobate and inwardly produced, thus forming an internal median rib; in addition there may be secondary or tertiary ribs or riblets or both. The basal and inner edges of the parietes and internal ribs are sharply denticulate or smooth. The basis is membraneous. The opercular valves are simple, and approximately of the same size and shape.

Distribution and Habitat. Recent: Sicily, Corsica, Baluchistan, Malay Peninsula, Japan, Borneo, Timor Sea, New Caledonia, Australia, Marutéa Atoll (Tuamotu Archipelago), Honduras, United States, and Gambia. Pleistocene: United States (Florida).

Platylepas occurs in tropical and warm-temperate seas (between 45° N. and 45° S. latitude) on turtles (*Caretta, Chelonia, Thalassochelys*), sea snakes (*Enhydris, Distira*), fishes (*Hydrophis, Lepisosteus*), and manatees (*Trichechus*). At the present time there is no information available to indicate any preferential site of attachment on the host.

Remarks. The platylepads are one of the more poorly known barnacle groups owing to their small size and unusual occurrence. Only three species were known to Darwin (1854), *P. bisexlobata*

[= *P. hexastylos*] from the Mediterranean Sea and *P. decorata* from the Galapagos Archipelago; the third species, a juvenile from Borneo, has never been named. Lanchester (1902) described the fourth species referred to this genus, *P. ophiophilus* from the Malay Peninsula. *Cryptolepas ophiophilus* [= *Platylepas krugeri;* see Pilsbry, 1916], the fifth species, was described by Krüger (1912) from Thailand. Pilsbry (1916) described a new "variety", *P. hexastylos ichthyophila* from Florida, which was the last species assigned to this genus. Until the present time no fossil species of *Platylepas* have been described.

The type specimen of this genus was presumed, by Pilsbry (1916), to have been lost. At the author's request Dr. Torben Wolff kindly searched the collections of the Universitetets Zoologiske Museum, København, only to discover " . . . that the type of *Platylepas hexastylos* is definitely not to be found in this museum anymore" (letter of January 30, 1963). Designation of a neotype, which is beyond the scope of the present study, is now being undertaken by the author.

Platylepas wilsoni, new species

Figs. 2-3

Diagnosis. The compartment is quadrilobate and ornamented with strong regular or bifurcating longitudinal ribs and imbricating growth ridges, thus presenting a shingled appearance. Internally there is one primary rib, two secondary ribs, and two tertiary riblets. The radius is a hollow tube closed at the apex but open at the base.

Fig. 2. *Platylepas wilsoni*, n. sp. Drawing of external, basal and internal views of holotype compartment (actual width, 3.7 mm.).

Description. This new species is represented by a right lateral or carinolateral compartment. The external surface of the com-

partment is divided into four lobes. There are a deep primary sulcus and two shallower sulci all of which are, more or less, equidistantly spaced. The shell sculpture consists of pronounced longitudinal ribs and imbricating growth ridges, giving a somewhat shingled appearance. Each shingle is in the form of a square-bottomed V. Midway between the base and the apex of the compartment one or two of the ribs of each lobe bifurcate. Hence, near the apex there are three or four ribs, but at the base there may be four to seven ribs. The outer lamina appears vitreous, through which can be seen a dense, white, presumably calcitic material which is in the form of a Y or V. There is one such figure for every shingle. Fusion of adjoining corners of the shingles produces at several points on the external surface of the plate either deep or shallow pits, depending upon the depth of the intercostal grooves.

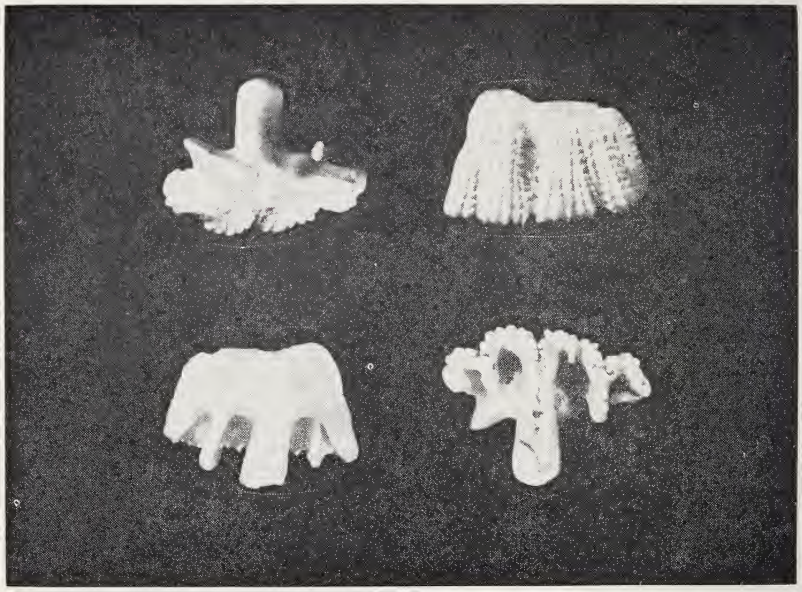

Fig. 3. *Platylepas wilsoni,* n. sp. (Top) apical, external, (bottom) internal and basal views of holotype compartment (actual width, 3.7 mm.).

The radius is narrow and of a uniform width from the apex to the base. Its external surface is rugose and lacks distinct vertical or transverse striae. The radius is hollow, being merely a tube

open only at the base. The sutural edge of the radius is broad and tapers slightly, from the apex to the base. The denticulation is simple, occupying less than one-half of the outer sutural face. Some of the uppermost denticles are bifid. The interdenticular areas open into the hollow behind the outer radial surface. From the external surface of the compartment the sutural denticulations would presumably appear as simply a row of pores if the other parietal plates were present and joined. The sutural edge of the ala is smooth.

The sheath is approximately one-half the height of the compartment. The upper one-half of the medial rib forms a slight convexity on the sheath surface, which appears smooth, except on this longitudinal ridge. Here, under oblique reflected light the sheath surface is seen to bear a few moderately broad, evenly rounded, parallel growth ridges. These horizontal ridges also extend down the face of the medial rib.

The infolding of the wall is reflected internally by three strong ribs, one primary and two secondary. On each side of the midrib there is a hollow behind the depending basal margin of the sheath. Tertiary riblets, one on each side of the midrib, extend upward but do not enter into these shallow hollows. The external ribs cross the basal margin of the compartment and extend a very short distance, internally, towards the apex, thus presenting a serrate basal margin.

The strong sculpture on the basal margin of the primary and secondary ribs is probably formed by the modification of the ribbed external shell sculpture, i.e., presumably as the wall folds inward the external ribs meet and interlock in such a manner as to produce the basal ridges. Total fusion of the walls comprising the medial rib is complete only at the distal end of the rib whereas the secondary ribs exhibit complete fusion. There are no parietal "tubes".

Measurements of the holotype are as follows: height of compartment, 2.5 mm.; width of compartment, 3.7 mm.; depth of compartment (measured from outer lamina to tip of internal rib), 2.7 mm.

This new species may be easily distinguished from all of the presently known platylepads by the quadrilobate parietes, the shingled external ornamentation, and the hollow radius. *Platylepas ophiophilus* and *P. hexastylos ichthyophila* have, respectively, three

to four and four to five secondary ribs on each side of the internal medial rib and thus differ from *P. wilsoni* n. sp., which has one secondary rib and one tertiary riblet on each side of the median rib. *Platylepas krugeri* has only a medial rib, which serves to distinguish it from this new species. *Platylepas hexastylos hexastylos* possesses parietal "tubes," whereas *P. decorata, P. wilsoni* n. sp., and the above mentioned species do not. *Platylepas decorata* is the only species that has a medial rib with a smooth basal margin. All of the Recent species of *Platylepas,* with the exception of *P. wilsoni* n. sp., have bilobate parietes. It should be noted here that each of the known species has a distinct external ornamentation, which apparently is species-specific.

Type Depository. The holotype of *Platylepas wilsoni* n. sp. is deposited in the collections of the U. S. National Museum, Washington, D. C., catalogue number 648508.

Etymology. It is a great pleasure to name this species in honor of Druid Wilson, U. S. Geological Survey, who has often emphasized the need for a systematic study of the Atlantic Coastal Plain fossil barnacles, and who kindly loaned this and other specimens he collected to the author for study.

Associated Cirripedia

Three other balanomorph cirripeds were found associated with *P. wilsoni* n. sp. in the Rim Ditch Canal fauna, one of which also appears to be a new species. *Chelonibia testudinaria* (Linnaeus), here reported for the first time in the Florida Pleistocene fauna, exhibits no morphological variations from Recent specimens. The specimen, a right lateral compartment measures 8.7 mm. in width, 4.1 mm. in height, and 4.4 mm. in depth. Large numbers of *Balanus niveus* Darwin were also collected. The scuta of at least two specimens have faint traces of longitudinal striae. No other morphological differences were noted in the specimens of this species examined.

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